

STORAGE

FAQ

Q My external hard disk and network-attached storage (NAS) devices are littered with random .DS_Store files. Where did they come from, and how can I get rid of them?

A If you share an external hard disk or NAS with a Mac user, Mac OS X leaves behind a number of .DS_Store files. These are used to store metadata such as icon positions and any custom keywords used by Mac OS X's Spotlight file search function.

Apart from cluttering up your folders, they won't cause Windows any harm, but they can be easily removed using a utility such as DS_Store Cleaner. Versions are available for both Windows and Mac OS X and can be downloaded from <http://projects.ryangrier.com>.

Mac users can prevent .DS_Store files being generated on file servers in the first place by following Apple's instructions at <http://docs.info.apple.com/article.html?artnum=301711>.

Alan Lu

PC systems and storage expert

alan@computershopper.co.uk

BUFFALO DriveStation Quattro 1TB

★★★★

£335 inc VAT

Buffalo's DriveStation Quattro is an external hard disk that consists of four 250GB PATA disks configured, by default, as a RAID 0 array providing 930GB of formatted storage. It can also be configured as a RAID 1 or RAID 5 array using the bundled utility program.

As a RAID 1 array, the Quattro would provide only 465GB of storage space, since it uses two disks to mirror the contents of the other two disks automatically, providing an up-to-date backup in the event of a hard disk failure. When configured as a RAID 5 array, the Quattro provides 698GB of storage space. If a single disk fails, your data remains safe.

The Quattro connects to your computer using USB or eSATA. It was one of the fastest external disks we've seen when connected using eSATA and set up as RAID 0 or RAID 1. Configured as RAID 0, it wrote large files at 51.52MB/s and read them at 65.07MB/s. It wrote small files at 13.24MB/s and read them at 14.85MB/s. It was a bit slower in all our tests, apart from reading small files, when configured as RAID 1. It wrote large files at 40.88MB/s and read them at 57.06MB/s. It wrote small files at 9.53MB/s and read them at 16.12MB/s.

The Quattro was much slower writing files when configured as RAID 5, although it was still quick at reading them. It wrote large files at 35.77MB/s and read them at 68.24MB/s. It wrote small files at 2.26MB/s and read them at 14.84MB/s. As expected, the Quattro copied files more slowly when connected using USB instead of eSATA. Overall, compared to other USB hard disks we've seen,



the Quattro was fast at reading files but slower than average at writing them.

The difference between RAID 0 and RAID 1 file transfer speeds wasn't as great over USB as over eSATA. As a RAID 0 array, it wrote large files at 22.68MB/s and read them at 29.95MB/s. It wrote small files at 9.59MB/s and read them at 10.87MB/s. As a RAID 1 array, it wrote large files at 22.37MB/s and read them at 29.57MB/s. It wrote small files at 8.09MB/s and read them at 11.55MB/s. But it performed just as poorly over USB as it did over eSATA when writing files when configured as RAID 5, although it read files quickly. It wrote large files at 18.44MB/s and read them at 29.30MB/s. It wrote small files at 2.04MB/s and read them at 9.36MB/s.

Although you won't be in breach of Buffalo's

warranty if you decide to replace a hard disk yourself in the event of a failure, this is easier said than done. The sturdy metal case is very tricky to open and disassemble.

We liked the Quattro's extensive RAID support, although you'll have to use it over eSATA to get the fastest file transfer times and, even then, the RAID 5 write speeds were disappointingly slow. The Quattro is also fairly expensive at 36p per gigabyte, but it may be worth the expense if your computer can't house an internal RAID array.

Alan Lu

SUMMARY

- ✓ Huge capacity and RAID support
- ✗ Difficult to open case
- ✗ High cost per gigabyte

INTERNAL HARD DISK 1TB capacity, 930GB formatted capacity (RAID 0), 4x 250GB hard disks, eSATA, USB Hi-Speed
PART CODE HD-Q1.0TSU2/R5
SUPPLIER www.broadbandbuyer.co.uk
DETAILS www.buffalo-technology.com

PERFORMANCE (see page 58)

Large files	59.3MB/s
Small files	14.1MB/s

-50% Reference +50% +100%

Also consider...

CRUCIAL 1GB Gizmo! Overdrive

★★★★★

£11 inc VAT

PRICE CUT!



USB flash drives tend to be much slower than hard disks, but Crucial's 1GB Gizmo!

Overdrive can write files at 13MB/s and read them at 25MB/s. It wasn't as quick at reading small files, but at 10.65MB/s it is still faster than most. It was particularly slow only when writing small files, where it managed a speed of just 0.37MB/s.

The Overdrive is faster than most other flash drives, but it costs less than £15 including shipping, making it great value.

USB FLASH DRIVE 1GB capacity (973MB formatted), USB Hi-Speed
PART CODE CT1GBUFDWHTH00
SUPPLIER Crucial 0800 013 0330
DETAILS www.crucial.com/uk
✓ Good performance; cheap
FULL REVIEW Feb 07

Large files average	10.65MB/s
Small files average	0.37MB/s

-50% Reference +50% +100%

MAXTOR Shared Storage II 1TB

★★★★★

£380 inc VAT

PRICE CUT!



Maxtor's Shared Storage II has an enormous

capacity of 1TB, and it costs only 46p per gigabyte. As it contains two hard disks, you can choose to configure it as a RAID 0 or as a RAID 1 array.

The Shared Storage may not be the fastest network storage device we've seen, but its low price, RAID support and UPnP media server make it a great buy.



NETWORK-STORAGE DEVICE 1TB hard disk, 928GB formatted capacity, 10/100/1,000Mbit/s network connection, 2x USB ports, UPnP media, iTunes, print, USB disk servers
PART CODE N14R010
SUPPLIER www.play.com
DETAILS www.maxtorsolutions.com
✓ Low cost per gigabyte; easy to configure; RAID 1 support
FULL REVIEW May 2007

Large files average	12.3MB/s
Small files average	2.5MB/s

-50% Reference +50% +100%

SYNOLOGY Disk Station DS107e

★★★★

£167 inc VAT

Synology's Disk Station DS107e is a NAS enclosure, to which you add your own SATA hard disk. The DS107e can act as a central file server for all the computers on your network, but it has plenty of other useful features, too.

Disassembling the attractive white enclosure and fitting a SATA hard disk involves only a couple of screws. Configuring the DS107e isn't difficult but some tasks, such as setting access privileges for different groups of users, are harder than they should be, thanks to some poorly laid out pages in its web configuration interface.

We fitted a 300GB SATA hard disk and ran our file transfer tests. The DS107e performed well in our large file test, but was sluggish copying small files. It was suitable for sharing large files such as videos or photos but copying lots of small files was frustratingly slow. Files copied to the DS107e retained their Windows file attributes, so hidden files remain hidden. We had no trouble sharing the contents of a USB flash drive or an eSATA hard disk across our network. The DS107e can also share a USB printer across your network, saving you the expense of a dedicated Ethernet printer, although documents can take a minute or two longer than usual to spool.

We had no trouble using the DS107e as an iTunes music server, although it wouldn't recognise DRM-protected music bought from the iTunes Store – an ability reserved for Apple's own products. The DS107e can also be used as a Universal Plug and Play media server, and we had no trouble playing back



video using a PC or an UPnP network media player. We saw no blurring, skipped scenes or sync issues in the fast-paced action sequences of our DVD film.

The DS107e can be used to download files from a website or using BitTorrent while the PC is turned off. It can also be used to share photos organised into albums, but there's little advantage in using it over a photo-sharing service such as Flickr, especially as you can't import existing albums from a program such as Picasa or Photoshop Album. If you need to access your files remotely, the FTP server is highly customisable. You can control how much bandwidth is consumed by FTP uploads, which is essential if your ISP enforces broadband usage caps.

The DS107e's iTunes server is one of the few we've seen on a NAS device that works. But its slow small files performance is disappointing. It isn't for you if you regularly need quick access to your files. At £167 including VAT, it isn't particularly cheap either, especially if you don't already have a spare SATA hard disk. If you have no need for its distinguishing features then Maxtor's Shared Storage II (see 'Also consider...', below) is a better-value and slightly faster NAS.

Alan Lu

SUMMARY

- ✓ Useful features
- ✓ Easy to assemble
- ✗ Slow at copying small files

NETWORK-ATTACHED STORAGE

10/100/1,000Mbit/s network connection, three USB ports, UPnP media server, iTunes server, print, USB disk, web, FTP servers
PART CODE DS107e
SUPPLIER www.scan.co.uk
DETAILS www.synology.com

PERFORMANCE (see page 58)

Large files	11.9MB/s
Small files	1.8MB/s
	-50% Reference +50% +100%

SAMSUNG Super Writemaster SH-S182M

★★★★★

£28 inc VAT



The Super Writemaster from Samsung

proved to be one of the speediest internal burners we've seen when creating single-layer DVDs. It includes Nero's Recode software, which allows you to squeeze a two-layer DVD movie on to a single-layer DVD.

At such a low price, the Writemaster is a bargain.



INTERNAL DVD WRITER 18X DVD-R, 18X DVD+R, 6X DVD-RW, 8X DVD+RW, 8X DVD-R DL, 8X DVD+R DL, 12X DVD-RAM, 48X CD-R, 32X CD-RW
PART CODE SH-S182M/RSMN
SUPPLIER www.amazon.co.uk
DETAILS www.samsungodd.com/eng ✓ Speedy single-layer DVD writing ✗ Slow two-layer DVD performance
FULL REVIEW Apr 2007

DVD+R	9.91
DVD+R DL	9.31
DVD-R	10.41
DVD-R DL	5.41
	-50% Reference +50% +100%

SAMSUNG SpinPoint T166-HD501LJ

★★★★★

£71 inc VAT

PRICE CUT!



Samsung's 500GB SATA hard

disk is a great choice if you need more space for programs, movies, music, photos and documents. It costs only 16p per gigabyte, but it's the fastest 7,200rpm SATA internal hard disk we've seen so far. It's an amazingly quick drive and great value, too.



3½in INTERNAL HARD DISK
500GB capacity, 465GB formatted capacity (NTFS), SATA 300 interface, 7,200rpm spindle speed, 16MB cache
PART CODE HD501LJ
SUPPLIER www.scan.co.uk
DETAILS www.samsung.com
✓ Very fast; low cost per gigabyte FULL REVIEW Jul 07

Large files	78.3MB/s
Small files	29.3MB/s
	-50% Reference +50% +100%

CHOOSING AN... Internal Hard Disk

Follow the steps to find your ideal specs

CAPACITY: 500GB

SPINDLE SPEED: 7,200rpm

INTERFACE: PATA or SATA

Recommended minimum in grey

1 An internal hard disk with the above specifications should cost around £70. It's fast enough for general use and provides enough storage space for an average user. Make sure you get the interface type that matches your PC.

Parallel ATA (PATA) connectors use wide, ribbon cables and are generally found in older computers. The newer Serial ATA (SATA) interface uses a thinner cable and is slightly quicker.

2 PATA hard disks require a standard four-pin Molex power cable. Some SATA disks can also use a Molex power connector, but others require the newer SATA power connector. If your power supply doesn't have any SATA power leads then you can buy a converter for around £4 including VAT from www.maplin.co.uk.

3 Buy the capacity hard disk that you'll need, but aim to leave a little breathing room, as you'll always need more storage. Hard disks with a capacity of 300Gb to 400GB tend to have the lowest cost per gigabyte, but not by much. Buy the largest hard disk that you can justify.

4 If you want more disk space or you want to protect your data, think about buying hard disks to create a RAID array. These use multiple hard disks to create a single, large, logical disk with better performance or protection for your data. RAID arrays need to be built with hard disks of the same size. Technically, these can be from different manufacturers, but try to get identical drives if you can.

5 A hard disk's spindle speed is very important as it governs how quickly the disk can transfer data. A spindle speed of 7,200rpm is common on desktop drives and fast enough for most purposes. If you do a lot of video editing or you run demanding applications, a 10,000rpm hard disk is a better choice, but it is a lot more expensive. Hard disks with 5,400rpm spindle speeds aren't common and are quite slow, but they generate less heat and noise so could be a good choice if you're building a small, quiet PC.